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ABSTRACT

A futuristic study of the Thomas Jefferson Planning District (TJPD) in the year 2000 was conducted by Piedmont Virginia Community College (PVCC) to gain insights into those trends and pressures likely to affect the TJPD in the future. Interviews were conducted with 85 area leaders to determine their views and projections regarding lifestyles; institutional structures; training; changing jobs and functions; computers, telecommunications, and automation; 13 academic and vocational subject areas; major educational issues for PVCC; technological change; changes in living arrangements; political developments; changes in the role of private enterprise; leisure; social stratification and educational discrimination; the aging of society; the changing nature of work; external influences on education; and the expansion of knowledge. Later, the study participants were brought together to review results and discuss the educational implications of the study. Major study findings included the following: (1) computers, communications, and advanced mechanization technology will have a dramatic impact in many fields in the coming years; (2) the structure of many jobs will change, with sales people, industrial supervisors, and office workers becoming more professionalized; (3) the social stratification of society may increase as desirable jobs and educational programs become less available; (4) the aging of society may increase conservatism and geographic stability; and (5) growth in the TJPD may be limited by public policy. Appendices include economic and demographic profiles and a list of study participants. (HB)

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PIEDMONT 2000
A COMMUNITY IN TRANSITION

A Futuristic Study of the Thomas Jefferson Planning District
Prepared by the Piedmont 2000 Committee of
Piedmont Virginia Community College

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March 1, 1983

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- Piedmont 2000 Committee -

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INTRODUCTION

Piedmont Virginia Community College (PVCC), an accredited member of the 23 school Virginia Community College System, was established in Charlottesville in 1972. PVCC's mission is to provide quality educational opportunities for the residents of Albemarle, Fluvanna, Greene, Louisa, and Nelson Counties as well as the City of Charlottesville. To effectively discharge this mission, PVCC strives to understand the unique character and changing needs of its community. "Piedmont 2000" is a futuristic study aimed at furthering this understanding.

The study was initiated in the spring of 1981 with the goal of painting a picture of the community in the year 2000. While this picture will suggest future pressures that may require institutional responses on the part of PVCC, it is also intended to be beneficial to non-educators. To that end, the project has been co-sponsored by the Charlottesville-Albemarle Chamber of Commerce and this report will be widely distributed throughout the community.

Statistical information concerning population and economic trends was examined. In addition, structured interviews lasting approximately one hour each were conducted with 85 area leaders who are in advantageous positions to be aware of developing pressures and trends in their areas of expertise. Finally, a forum of these leaders was convened in July 1982 at PVCC at which time findings were presented and participants broke into groups to discuss implications of the findings for the educational sector.

This document is the final report on the Piedmont 2000 Project. It presents project findings, by interview sector and by five general themes, and summarizes panel discussions concerning educational implications.

Finally, the Piedmont 2000 Committee reflects on what has been learned and ventures some conclusions. Appendix A presents some demographic and economic data concerning the Thomas Jefferson Planning District, and Appendix B lists the community leaders who participated in the project. A detailed discussion of methodology is available from the Dean of Instruction, PVCC, Route 6, Box 1A, Charlottesville, VA 22901.

EXECUTIVE SUMMARY: Piedmont 2000

"Piedmont 2000," a futuristic study of the Thomas Jefferson Planning District (TJPD) in the year 2000, was conducted by Piedmont Virginia Community College (PVCC) with the sponsorship of the Charlottesville-Albemarle Chamber of Commerce. The goal of the study was to gain insights into those trends and pressures likely to affect the TJPD in the next 18 years, insights which will be of value to community leaders, businessmen, and educators. Eighty-five area leaders from several fields were interviewed at length during the spring of 1982. The leaders were brought together in July, 1982 to review the results and to discuss educational implications of the study. The following points represent the study's major findings:

1. Computers, communications, and advanced mechanization technology will have a dramatic impact in many fields during the coming years. High technology will contribute to declining demand for unskilled labor and an increasing demand for retraining. Clerical and health related jobs will be restructured. Other job sectors greatly affected will be manufacturing, retailing and banking. Computers will become a critical part of the school curriculum at all levels.

2. The structure of many jobs will change. Sales people, industrial supervisors, and office workers will become more professionalized. Unskilled jobs will become more scarce and a portion of the population may become unemployable. The concept of work may begin to undergo change; it may ultimately come to be looked upon as a privilege, an allocated resource, or a social responsibility of government or business.

3. The social stratification of society may increase as desirable jobs and educational programs become less universally available. Educational discrimination may become perceived as a significant social problem. There appears to be a growing division between societal "haves" and "have nots."

4. The aging of society will have a pervasive effect. Conservatism and geographic stability in the TJPD may increase. Worker productivity is likely to increase due to a growing proportion of middle-aged workers. Immigration of retirees combined with modest growth in the indigenous retired population will favor the development of leisure communities and will put new demands on health care providers and local government.

5. Traditional family structures are likely to change. Single parent families may increase in prevalence, putting new demands on females to develop marketable skills and undertake new social roles. At the same time, old and new living arrangements, such as extended nuclear families and unmarried partners living together, are likely to gain acceptance.

6. Political conservatism, marked by concern over quality of life issues and business influence, is likely to persist. This conservatism will result from an aging population, slow economic growth, and possibly reduced population mobility.

7. Growth in the TJPD may be limited by public policy. Continued controversy over the allowable limits of business expansion is expected. Water and waste management are likely to be the major environmental concerns in the area.

8. Gradual shifts in the focus of social control are expected. Many federal functions will shift to states and localities. An exception will be education, which may shift gradually from local to state control. The private sector may increasingly be called upon to discharge social welfare functions.

9. Functional arrangements in the business and service sectors will change as firms expand services to encompass functions related to their primary concerns. For example, department store chains may offer such services as insurance, financial management, and legal assistance. Professional services, like legal aid and medicine may be affected by such new organizational arrangements as health maintenance organizations, legal insurance, and remote medical laboratories.

10. Leisure activities will become increasingly important and directed towards individual, non-competitive activities.

11. Educational curricula will be influenced by business concerns. Lifelong learning will likely increase dramatically, and to intensify its competition with the traditional school-based curricula. Debate over what will be offered and who should pay for education will grow.

12. The expansion of knowledge will affect people in many ways. Computerization and information-handling professions will grow. Teaching people to learn and teaching attitudes towards retraining and work will become increasingly important to many sectors of society.

INTERVIEW RESULTS: THEMES

Certain questions were addressed to a wide variety of interviewees to explore some global themes concerning the future which cut across areas of expertise. This first section of interview results discusses findings concerning five thematic areas: Lifestyles; Institutional Structures; Training; Changing Jobs and Functions; and Computers, Telecommunications, and Automation.

Lifestyles

Conservatism. Most respondents foresee a general climate of political, religious, and personal conservatism through the remainder of the century in the Thomas Jefferson Planning District. Changes in the basic concept of what constitutes a "household" are not considered likely. In fact, most respondents project that "traditional" family units and two and three generational family units will become increasingly common due to financial pressures, renewed interest in stable relationships, and lowered geographical mobility. Several respondents also project an increase in the prevalence of single-parent families. Public support of the arts will increase. As a higher percentage of disposable income goes into leisure, such activities will increasingly be noncompetitive and self-directed in nature and will involve individual or family activity rather than groups or teams.

Work. Standards of living will generally increase with economic expansion in the Thomas Jefferson Planning District. Respondents are split on the future of the work week. Service sector respondents feel the four-day week and shorter total hours are likely by the year 2000 while industry respondents disagree.

The same disagreement also exists concerning job sharing: The service sector foresees an increase in the practice while manufacturers do not, partly due to employee compatibility problems and because, as one respondent noted, "No one is happy with half of anything." A majority of respondents project that quality of the work environment, retirement benefits, job security, and fringe benefits will become increasingly important priorities for workers. A more harmonious labor/management environment stressing participative management is foreseen. Firms are likely to put increased emphasis on the emotional adjustment of workers, including provision of recreational and fitness facilities, retirement counseling, and retraining for employees nearing retirement age. Most respondents project that retirement age will rise, though three respondents foresee the opposite trend. A rising percentage of blacks and females are expected to hold supervisory jobs.

Career Change Patterns. Most respondents feel that future career changes will become less frequent because of increasing desire for job security, interest in community and family ties, better preparation for a chosen career, and fewer artificial barriers to advancement in a given field due to lessening racial and sexual discrimination. Others noted pressures favoring greater career mobility by the year 2000, citing higher education levels, the desire for self-actualization, and opening of challenging new career fields.

Social Mobility. Considerable disagreement also characterized projections about social mobility. Some respondents project social mobility will decrease in the next 20 years. They cite limited growth opportunities in the economy, a flooded white collar job market, and conservative court decisions. Education is also blamed. One respondent said, "Who we are and what we are as a nation is made up of middle achievers. Educators have neglected the great middle."

Business respondents tend to take a more optimistic view because of economic growth in peripheral counties which will provide occupational advancement opportunities for underemployed residents and because social mobility has been an historic trend. Others suggest that people are becoming more personally involved in their lives following the decline of the social initiatives of the '60's and are more willing to take individual initiative to better their situations.

Institutional Structures

Business. Banking will be revolutionized by the micro-computer and by expected legislation allowing banks to cross state lines and create more flexible financial instruments. Banks will see more competition from other financial institutions and more central-office control. Computerization will virtually eliminate tellers and many manned branch banks will close while automated outlets spread rapidly. Realtors will offer a comprehensive network of services, including insurance and financing. Malls and department stores will increasingly offer such services as medical exams, legal services, insurance, and realty sales on a walk-in basis. Retailers will cope with a dichotomized consumer market: Sterile "necessities" will increasingly be sold via telecommunications, but sophisticated, educated consumers will demand highly professionalized sales services for certain products, such as automobiles, leisure equipment, and luxury items. Manufacturers will respond to the more sophisticated consumer by emphasizing quality control, production flexibility, and customer service. Plants will be run by teams of specialists, and the division between management and labor will blur as those teams increasingly include labor leaders.

Medicine. A health maintenance organization centering on preventive care is likely to be established in the next twenty years in the Thomas Jefferson Planning District. Family practice teams featuring physicians, nurse practitioners, and other para-professionals, will become more common forms of private practice. The traditional function of hospitals will not change, but pressure on them will grow as more and more medical specialists move into the area and require specialized and costly hospital support. Hospital administrators will have to deal with increasing dissatisfaction among highly trained non-physician specialists who aspire to the status of physicians.

Law. Prepaid legal insurance will grow during the remainder of the century, partly supplanting the traditional retainer system. Both "legal maintenance organizations" and legal clinics with corporate structures will appear in the community, but they will not grow as rapidly in the Thomas Jefferson Planning District as they will nationally due to low volume of business. Walk-in legal offices will slowly gain acceptance in shopping malls and department stores. Law firms and attorneys will rapidly become oriented towards specialized practice -- as one respondent said, the legal "general practitioner" will begin to disappear.

Religion. Projections are split about the future of para-church organizations, such as Intervarsity Christian Fellowship and religiously-aligned study centers, which have grown rapidly in the last 20 years. Some respondents expect modest growth. A majority, however, predict a peak in the near future followed by decline, explaining that para-churches have been oriented around individual truth seekers while the present trend is back towards established religious authority. Alternative organizations within congregations will tend to form around a fellowship group concept centered on spiritual

guidance and departing from such traditional church-based subgroups as service organizations and "men's club" fraternal organizations. Increasing prevalence of campus groups, small fellowship meeting groups, and home study groups is foreseen. Multiple affiliation will grow as parishoners participate flexibly in various groups in a given congregation.

Education. Few changes are forecast in the form of the traditional public school or university. More diverse educational settings are foreseen; as adult part-time learning mushrooms such forms as independent studies, home learning via interactive television, on-the-job training, and apprenticeship may expand rapidly. There will be a revision of the traditional concept of the school -- fitness centers, for example, presently market exercise programs and spa membership as "classes", even though formal instruction is limited. Private school attendance is not projected to increase due to lack of economic base among such schools and enhanced competition from public schools, particularly for college-bound students.

Training

Business. Technological advances and growing consumer sophistication are two primary factors underlying the evolution of the business workplace in the next twenty years. In the service sector, increased use of telecommunication sales will reduce the numbers of unskilled sales workers needed. A more professionalized salesperson will be needed who will be able to explain the complicated uses of sophisticated consumer items, sort out complex product lines and options, give follow-up service, and arrange financing. In industry, unskilled workers will be replaced by technologically-trained workers, and in

business, unskilled clerks will be replaced by employees familiar with computerized accounting, inventory, payroll, and word processing. Across several different fields, respondents earmarked certain underlying skills which will be increasingly important besides knowledge of specific machine operation: communication skills, including computer literacy; ability to learn and adapt to new situations; and general understanding of one's business with some understanding of marketing, financing, productivity, systems analysis, and profitability. Retraining will be critical, but business respondents stress that it cannot be totally on-the-job training. On-the-job training is costly and leads to over-specialization. Increasingly, business will look to education institutions to provide continuing education for upgrading skills and to provide the more general skills necessary in the future, such as ability to learn, business acumen, and communication skills.

Education. In light of the foregoing discussion, it is interesting that educational respondents feel that the growing influence of business concerns on curriculum is the most significant "external" influence on education expected in the next twenty years. Educators' views of curricular priorities match those of business respondents to a certain extent: Educators cite computers, math and science, communication, and specific vocational areas as priority areas for the next twenty years, though they did not mention the generalized business knowledge cited by business respondents. It may be that "vocational education," which seems to be a fairly broad term for educators, will become defined by the expressed needs of the business community. In the profession itself, educators project that emphasis on continuing education for teachers will intensify in order to keep up with changing times. On-the-job training and sabbaticals may become

more widely used as ways to upgrade teacher skills and certify teachers in shortage areas such as math, science, and computer education.

Other Fields. Most legal respondents project an increase in the need for para-legals who will require training in specialized areas, especially wills, divorce, and real estate law. Two respondents noted that presently employed para-legals with formal training came from outside Virginia and that there was a need for para-legals formally trained in Virginia law. Medical respondents were emphatic about the need for more highly specialized skills in all areas, but expected on-the-job training at hospitals to continue to accomplish much of the necessary training for para-medicals and nurses.

Changing Jobs and Functions

Computer-Related Jobs. Computer-related jobs are expected to expand rapidly in all sectors through the remainder of the century. Jobs will relate to installation, calibration of interactive sensing instruments (especially in industry and medicine), software design, systems analysis, repair, and operation. Demand for programmers may peak in the early '90's as computer languages become simplified, automatic programming computers come on the market, and specialized software becomes readily available and easier to use. Software maintenance, configuration management, codes, visual analysis, libraries, and knowing what is available will be the major computer-related jobs.

Legal Jobs. Use of paralegals will increase in the next 20 years because of their cost effectiveness. Respondents estimated that larger firms could presently profitably employ one paralegal for four or five attorneys. Para-legals would be most heavily involved in real estate transactions, routine

litigation, and wills.

Medicine. Need for all nursing specialties is expected to expand. The nurse practitioner role will develop steadily. Nurse practitioners will practice in physician-led teams, do routine exams, supervise home care and rural clinics, and possibly even write prescriptions and do minor surgery. Other medical occupations likely to expand during the remainder of the century include home health care specialists, hospice workers, midwives, radiologists, and a variety of paramedics. Laboratory technologists and pharmacists will become increasingly specialized and highly trained, and they will become more critical in diagnosis and patient treatment. Medical records are likely to be revolutionized by computerization.

Education. Teacher specialization will increase during the remainder of the century and use of the educational team led by a master teacher is likely to expand. Administrative duties may be assumed by specialized teachers to a greater degree, somewhat analogous to the participative-management model. No significant growth is foreseen in educational para-professionals. Vocational, computer, and math and science teachers will be in greater demand through the end of the century reflecting the new emphasis in curriculum.

Clerical. While only a modest overall increase in office workers is projected, radical restructuring of clerical jobs is expected in the next twenty years. Word processors will replace typewriters. Computerization will lower the need for inventory and payroll clerks. The secretarial function will become increasingly professionalized (and possibly licensed), and it will include administrative, communicative, and systems analytic duties. Human resources development specialists involved in on-the-job training and retraining will be in demand.

Religion. Some respondents project an increase in paid religious workers, especially religious education and ministry specialists who will focus on certain age groups and need areas.

Leisure. Respondents project an increase in leisure professionals and performing artists fueled by a growing, relatively prosperous retirement population in the Thomas Jefferson Planning District and by immigration of well-educated professionals and technicians.

Business Vocations. Some respondents project a decrease in the need for general repair technicians due to modular design, computer-assisted trouble-shooting, and elimination of exposed gears and cams in industrial machinery. Others project need for greater expertise in repair work due to increasing technological complexity of some machinery and new alloys used in manufacturing. Manufacturers project a decline in the need for unskilled workers and an increased need for human resource development workers. Two year graduate technicians will be in demand but with higher skill levels. In part, they will replace the traditional supervisor. These technicians will have communication skills, a broad engineering background, and the ability to do flexible productivity and management-supporting studies. The drafting role as we know it will disappear. Drafters will be retrained to become designers who are required to visualize many layers of a design.

In the retail and service sector, demand for unskilled sales clerks will decline as a higher proportion of routine buying is done with telecommunications. Simultaneously, there will be demand for more highly-professionalized sales personnel who can service customer needs concerning information, performance, and financing regarding increasingly sophisticated and expensive luxury goods. Demand for bank tellers will be limited to a few full-service outlets, while

need for computer-proficient employees will rise. Demand for banking professionals, such as investment analysts, may also drop as banks merge across state lines and achieve more centralization of decision making.

Computers, Telecommunications, and Automation

Business Impact. There was a general feeling among respondents in all sectors that in the last twenty years society has become sensitized to the potentials of computers and telecommunications, and the next twenty years will establish both as universal influences over practically all walks of life. As one respondent put it, the novelty phase is ending and the implementation phase is beginning.

Business people project that telecommunications will replace personal shopping for routine items. Automatic, 24-hour banking machines will replace many manned branch banks and will become ubiquitous features of large stores and shopping malls. By the year 2000, computers will have revolutionized clerical functions such as inventory control, accounting, data filing, and word processing for nearly all businesses. Computers will also enable even small retailers to make studies of customer buying patterns. Electronic mail systems will transport an increasing proportion of business communications, though great impact on personal mail is not projected by the year 2000. Industry will use computers to regulate and control production lines and industrial robots will replace many hourly workers, enhancing quality control, productivity, and production flexibility. Need for unskilled workers will plummet; however, respondents are not clear on the impact of computerization on overall employment. Historically, employment has increased with automation, largely due to a shift

in employment from manufacturing to the service sector, which presently employs 70% of all workers nationwide.

Professional Impact. In education, the feasibility of computer-assisted instruction and home-based instruction through interactive television facilities has long been recognized, but rapid growth in the use of these capabilities is not projected. Computers will, however, heavily affect curriculum. By the year 2000, computer literacy for all students, even in the elementary grades, is projected to become an educational goal while specific computer technologies will enroll an increasing number of high school and college-aged students. Retraining of adults anxious to maintain marketable skills, including adults with baccalaureate degrees in the liberal arts, will be a rapidly expanding educational field likely to profit from use of "non-traditional" educational practices such as proprietary schools, cooperative arrangements with industry, and various forms of independent study projects.

Respondents in the medical field regard computer technology as perhaps the most important influence on medicine during the remainder of the century. Home health care, including computers and telecommunications which will monitor chronic conditions, has the potential to free up scarce hospital space, lower costs, and facilitate more timely treatment of emergencies. Computer aided diagnosis and treatment is already being used experimentally in the Thomas Jefferson Planning District and is expected to gain acceptance among physicians. Computerized patient records will revolutionize the job of health records specialists. Some respondents worry that technology will tend to depersonalize the doctor-patient relationship and will usher in a host of new ethical and legal considerations.

Impact on Lifestyles. While computers may revolutionize the workplace and professional practice, respondents foresee less dramatic impact on private lifestyles. It is technically possible to do most clerical functions and many executive jobs from the home using computers and telecommunications, but business respondents do not generally foresee such practices becoming common in the year 2000, noting that people need to get out of the house and go to work. Attorneys generally do not foresee a trend towards home-based clerical work because of fears about the confidentiality of legal matters handled in that way. Despite the avowed popularity of "electronic ministers", religious leaders foresee a negligible likelihood that religious services will be extended to home-based congregations locally. Respondents do not project that the principle library medium will become electronic instead of books. They project more use of electronic media in the next twenty years, especially for technical journals, but suggest that the computerization of the library will have to wait for the twenty-first century. In contract to these projections, it has been noted that retailers project increased use of telecommunication shopping for some items. Computers are likely to have a significant effect on leisure activities. Respondents project that leisure activities are likely to become more individual or family oriented, and self-directed activities will require some special skill or knowledge, a projection favoring video-computer pastimes.

INTERVIEW RESULTS BY SECTOR

Interviews were done by assigning 85 respondents to 13 knowledge sectors based on their areas of expertise. Several interviews were also conducted concerning a fourteenth sector, technology, but those results have been blended into other sectors. In this section, results for each sector are summarized. Some of the information in these sector summaries has already been reported in the preceding section, but will be discussed in greater detail here. The following sectors are summarized: agriculture, clerical services, culture and leisure, economics, education, legal services, manufacturing, medicine, political, religion, retail and service, social, and work environment.

Agriculture

Size of the agricultural work force, which accounted for six percent of the employment in the Thomas Jefferson Planning District (TJPD) in 1978 according to the Tayloe Murphy Institute, is projected to decline, as is the number of working farms. Four of six respondents project that the size of working farms will increase as small farms increasingly become "hobby farms" run by people with other primary sources of income. These projections parallel national trends and are accounted for by the increasing cost of land and its decreasing availability and by persistently low rates of return on agricultural investment. One respondent noted that commercial agriculture requires a unique "mind set", which has been eroding in the TJPD despite Albemarle County's restrictions on development of agricultural land.

A majority of respondents did project an increase in the importance of

two agricultural products, grapes and horses. A variety of reasons is offered for the increase in grape growing, including suitable climate and topography, relatively low capital investment requirements (estimated by one local vintner at $3,150 per acre, not counting land costs), and a favorable state legislative climate under which grape growers are permitted to have farm wineries and to establish retail stores near their farms. One respondent projects that at least 10 TJPD wineries will be marketing their own private labels by the year 2000. Another noted that the "mind set" and interest in grapes is well-developed at present. At least two large established wine producers have purchased land for vineyards in the region: Paul Masson in the Ivy area, and a German firm which has purchased in excess of 3,000 acres near Culpeper. Problems cited concerning viticulture include lack of knowledge concerning the best grape varieties for the region and high water use of wineries. An increase in the commercial importance of horse farming is projected due to favorable topography, local interest, and historical growth patterns. One respondent noted the significance of the National Polo Association's recent decision to locate its national headquarters in Charlottesville.

Various specialized products were also cited as possibly increasing in importance by some respondents, including poultry, game fowl, pure bred cattle, and berries.

Clerical Services

Employment Outlook. Despite enhanced clerical productivity due to computerized office equipment, all respondents project an increase in the number of office personnel employed in the year 2000. General business growth is one cause, but respondents note that the quantity of information to

be processed is mushrooming. Other causes cited include increased quantities of available information to be processed and growth in the labor-intensive service sector. Most respondents consider it unlikely that a massive shift in clerical work from the office to the home will occur despite its technical feasibility because people need to get out of the house. More specialized training will be required of clerical workers in the next 20 years, especially in computer-related areas. Respondents cite a developing demand for employees with good communication skills. Respondents consider it unlikely that clerical workers will require licensing or certification by the year 2000, though one notes that a trend may develop to bond certain employees for confidentiality, which may require licensure.

Restructuring Clerical Jobs. Respondents foresee the release of clerical workers from menial tasks, enabling them to assume more responsibility. Increasingly specialized clerical workers will be in demand for word processing, data management, and retraining. One respondent foresees the need for a specialist in numerical data management - a "numbers clerk". Need for traditional typists, payroll clerks, and inventory specialists will decline. Several respondents project greater prevalence of administrative secretaries with a broad background of general knowledge, upgraded technical skills, and greater responsibility for exercising judgment in the areas of coordination and organization, as well as supervision and retraining.

Culture and Leisure

Arts. A large majority of respondents foresee increasing public interest in the arts as evidenced by participation in arts and crafts, attendance at

concerts and plays, business support of arts, and financial support of public television. Interest will grow due to continued immigration of educated, well-travelled people and increasing time for arts as the population ages. Most respondents do not foresee greater support for the arts by local government, however, due to cost considerations. Governmental support is likely to be restricted to designing multi-use structures, such as the proposed Charlottesville High School auditorium and the Vinegar Hill Conference Center, to accomodate the performing arts.

Libraries. Use of public libraries is projected to increase. Although libraries will provide more electronic media and equipment, few respondents foresee large-scale replacement of books by electronic media in the next 20 years, though it might occur in the 20 years after that.

Leisure. Increasing public interest in leisure activities through the year 2000 is projected, especially in leisure pursuits that are noncompetitive, individual, and easily accessible. Specific activities cited as likely to increase in popularity include fitness-related activities such as jogging, bicycling, tennis, golf, and hiking; performing arts and art festivals; and video games. Competitive sports will be increasingly professionalized.

Almost all respondents foresee increase in leisure-oriented residential communities within the TJPD. Area businesses are also projected to increase support of employee leisure activities. One respondent projects that pari-mutuel betting will be legalized in Virginia by the year 2000 and that a theme park, along the lines of Kings Dominion or Busch Gardens, will open in the TJPD in response to an increasing tourist trade and general population growth in the area.

Economics

Standard of Living. All nine respondents project an improvement in the standard of living in the TJPD through the remainder of the century, citing as reasons the presence of well-educated leaders, the influence of the University of Virginia, and the strong attraction of the region to outside technical firms. Influx of technically-oriented light industry is projected to have a particularly beneficial effect on living standards in peripheral counties, where economic disparities among the populace are most pronounced. While most respondents expect a rise in discretionary income, two forecast a decline due to the larger families associated with the "baby bulge" of the late 80's and increasing energy costs. The share of household expenditures devoted to health, leisure, transportation, and energy is projected to increase, but respondents disagree on future expectations concerning entertainment expenses. Some predict increased expenditures with more leisure time, while some project that in-home entertainment will first raise, then lower expenditures.

Growth in TJPD. All respondents foresee continuation of this area's historical economic stability. Growth for the remainder of the century is projected to be concentrated to the northwest of Charlottesville along the Highway 29 corridor, with some growth also occurring in areas to the east of the city, notably Zion X-Roads, Mineral, and Palmyra. While respondents feel business decline in Charlottesville has bottomed out, they predict stability or gradual decline in city residency. There is a general feeling that the TJPD can expand rapidly if it chooses to (one elected official guessed a maximum of five to six percent a year through the remainder of the century) but that the challenge of the next 20 years was achieving manageable planned

development while retaining the area's high quality of life. Location of industry in peripheral counties may be hindered by lack of infrastructure (e.g. transportation, high quality educational facilities, and water and sewer) and by a complex political arena featuring rural and suburbanized factions.

Education

Education Levels. A majority of respondents foresee that the proportion of adults who have graduated from high school and college and who have obtained advanced degrees will rise in the TJPD. Increase in proportion of college graduates will occur despite increased vocational opportunities and an oversupply of graduates due to immigration of educated people. The most dramatic expansion is expected in part-time students, who may comprise as much as 40% of the adult population by the year 2000, mainly due to the desire for work-related retraining. Significant increases in community college graduates are also forecast.

Educational Funding. Competition between the various public educational sectors for state funds is expected to intensify. A majority of respondents project that primary and secondary schools will get an increasing proportion of state educational funds because of political pressure to ameliorate inequities between school districts due to property taxes and effective lobby pressure. Institutions of higher education will be expected to pay more of their own costs by raising tuition and fees. State influence over public school curricula will increase with funding. No significant increase in the proportion of students attending private secondary schools is foreseen unless

private school tuition tax write-offs become allowed by law; even then, only a modest increase is foreseen. Public schools will compete directly with some private schools by offering specialized courses and advanced placement.

Teaching and Teachers. The knowledge explosion will create a need to find incentives to entice the "best and brightest" people into public school teaching. Teacher specialization will increase. Some respondents foresee the advancement of the "master teacher" concept in which expert teachers will supervise a team of specialists in planning educational programs and will take over some administrative tasks from principals, receiving extra pay. Computers are universally forecast to have a pervasive effect on education, both in administration and teaching, and the development of computer-literate children and educators will become a priority goal through the remainder of the century. Some educators foresee an increase in "tailor-made" teaching, in which methodology and curriculum are flexibly matched to the student and teacher guided by the results of research on learning styles and school effectiveness, which is beginning to bear fruit in practical settings. Pupil-teacher interaction will decline as alternative techniques, such as independent studies and individualized instruction, become common. Curricular emphasis on math, science, computers, and vocational areas will increase, while several respondents see a decrease in emphasis on arts and humanities as a real danger.

External Pressure on Education. The most frequently mentioned external pressure affecting education in the next 20 years is an increasing tendency for curriculum to come from outside the schools, particularly from business. As one superintendent said, "Industry will start dictating what it wants taught," and new forms of cooperation and communication will develop. Other pressures cited by several respondents include environmental awareness and

international tension, public demand for accountability, technological advance, and new lifestyles featuring an older populace and more leisure time.

Legal Services

Specialization. A majority of the attorneys and law professors interviewed suggested that increasing specialization would color the practice of law for the remainder of the century. This trend will affect both lawyers and para-professionals. As the use of legal services becomes more prevalent and more sophisticated, legal offices will have to respond with streamlined procedures and specifically trained personnel.

Changes in Use Patterns. Most respondents project an increase in the use of legal services, particularly among individuals as opposed to business, because of increasing complexity of laws and regulations and the growing sophistication of potential users of legal services. Areas of law likely to receive increased emphasis include legal problems of the aged, legal malpractice, and the legal needs of nontraditional family groups.

Respondents project that the legal industry is likely to place more emphasis on inter-lawyer competition. Group legal insurance and pre-paid legal plans are likely to become more common. Legal clinics with a corporate structure are likely to increase in metropolitan areas, though there is disagreement as to whether the TJPD is large enough to support such practices. Attorneys expect increased acceptance of "walk-in" legal services located in shopping malls and large department stores, though by the turn of the century this kind of practice will still comprise a small percentage of the total. The local excess of attorneys (250 presently practice in the Charlottesville area) is expected to continue.

Paralegals, Secretaries, Clerks. Non-attorney legal jobs will increasingly require specialized training as paralegals make more of an impact in such areas as real estate transfers and routine litigation. The large number of law students at U.Va. will slow the growth of professional paralegal research occupations, but most respondents indicate they expect growth in the use of paralegals. Certification is not considered a likely requirement.

Manufacturing

Growth Trends. All manufacturing respondents project growth in the TJPD in employment in the personal and business service sectors and in research and development activities. Other growth areas cited by a majority of respondents include retailing, hotels and motels, and light manufacturing, especially electronics. Decline is foreseen only in agriculture. Adjusted for inflation, corporate expenditures for capital investment for plant modernization are projected to increase substantially, while there is less consensus on increases in payroll and employee benefits through the year 2000.

Emerging Characteristics. All nine respondents project that management-labor relations will be smoother during the remainder of the century as part of a nationwide trend due to more emphasis on job security, a more highly educated work force, and an industrial movement to participative management. Automation will decrease the need for untrained workers and will increase demand for technologically trained employees. While on-the-job training will increase, respondents note a need for more cooperation between business and educational institutions on appropriate formal education. Several respondents note the likely evolution of new type of first level supervisor or specialist variously

called a "production technician," "systems facilitator," or "productivity technician." Such an individual might have a two-year degree with training in general engineering, systems analysis, business statistics, and communication skills.

Problems and Issues. Various issues are cited as likely to influence the relationship between manufacturers and government in the next 20 years. Locally, these include lack of infrastructure to support industrial expansion in peripheral counties, a so-called no-growth policy among some local groups, and regulation and taxation. Statewide, the following major issues will emerge: the extent to which the Commonwealth will maintain a pro-business climate by encouraging transportation development, keeping taxes low (or lowering them), and encouraging pro-business land use policies. Extent of regulation and taxation policies are cited as major federal issues. One plant manager projects that a major issue at local, state, and federal levels will be the extent to which industry is expected to pick up social welfare programs which are dropped by government. Responding to foreign competition and foreign markets will be an increasingly vital concern to local industries.

Major Trends. The most frequently cited major trend in manufacturing which will be significant in the next twenty years is the move to participative management, which includes a complex of labor issues. As consumers become more sophisticated, quality control and customer satisfaction will grow in importance. Production flexibility, facilitated by more highly trained workers and automation, is a growing goal of industry.

Medicine

Medical Practice. In general, respondents feel there is a low probability

that state programs or national health insurance will become common for all patients in the next 20 years. A majority of respondents do see a better than even chance of the establishment of a health maintenance organization in this area in the near future. Professional interest in preventive medicine will continue to grow, spurred on by rising health costs and advances in basic understanding of disease. Many advances in medical practice are projected: Computer diagnosis and computer assisted home electronic monitoring for some conditions, genetic engineering, in vitro fertilization, and preventive measures for cancer with a consequent decline in radical cancer surgery. Stress-related problems will grow along with greater understanding of the dynamics of psychological problems; psychiatric treatment will make more use of chemical therapies.

Medical Careers. Physicians will continue to seek training in specialized areas of medicine, but specialists will become increasingly interested in family practice. Nurse practitioners are expected to take on more of the functions once performed exclusively by physicians, including routine physicals, supervision of home care and rural clinics, and baby deliveries; bedside nursing will become the province of nurses' aides. Requirements for specialized training and certification will increase. Besides nursing, non-physician specialties in greater demand will include home health care aides, computer specialists for diagnosis and medical records, midwives, hospice workers, and such ancillary service specialists as speech therapists, physical therapists, and medical technologists.

Medical Problems and Trends. Many respondents foresee that the major problems for medicine by the year 2000 will relate to technology - keeping up with it, servicing and calibrating, paying for it. Some worry that technology

may contribute to the depersonalization of the patient-physician relationship. As non-physician specialists become increasingly expert in their fields, team practice will become common with the physician's role becoming that of team leader and consultant to the patient. Non-physician specialists will expect more status and pay as their contributions to patient care become more extensive, causing personnel problems for administrators.

Political

Service Integration. All ten respondents project that major steps will be accomplished in the integration of Charlottesville and Albemarle County services by the year 2000, both for economic savings and because the county and city's interests will tend to coincide as the county becomes increasingly suburbanized during the remainder of the century. Complete consolidation is not foreseen; rather a pattern of collaboration on specific issues, such as the recent initiatives on revenue sharing and special education, is likely to characterize the next twenty years. Four respondents project no change in the role and character of the TJPD with the remainder predicting a decreased impact of the TJPD in its present form due to declining federal impetus for regional planning, lack of implementation powers, differences in priorities among the members, undue time demands on local officials, and over-politicization of the TJPD forum. Some respondents note that to be effective, regional planning would have to become adopted as a function of local governments with state support, rather than to exist as what one called an "additional overlay of government".

Future Spending. Total spending, adjusted for inflation, is projected to rise in the area of public health, largely due to historical trends and the

aging of society, while there is general consensus that spending on public legal aid will decrease. Half the respondents project an increase in expenditures on public secondary education, citing the "baby bulge" which will be entering school in the 80's and 90's, while there is no consensus on the future of spending on public higher education or public housing. Most respondents expect social service funding levels to remain constant. A general increase in local control over spending in the areas of public health, housing, social services, and legal aid is forecast. Exceptions to this trend are public secondary education and higher education, where control is expected to shift to the state. Projections are divided on federal control trends, with some respondents foreseeing decline in all areas and others projecting short-term decline followed by increase as the present "new federalism" runs its course. All respondents reject the possibility of a successful statewide "tax revolt" such as California's infamous Proposition 13 due to the state's no-deficit policy.

Political Climate. Respondents' projections about the future political climate in the TJPD clustered around two scenarios. Most outlined what one elected official called "businessman's conservatism." This scenario is characterized by decline in the political influence of U.Va. and enhancement of business influence, conservative spending policies, sharing of regional services and facilities, restrictive land use policies, and interest in preservation of historical landmarks and local culture. One respondent calls the opposing scenario "European liberalism." Under this scenario, political parties and leaders come to mistrust the political right more than the left resulting in more social activism; popular interest in the problems of the poor and aged grows with urbanization. Statewide, no major changes are foreseen by either group. A slight liberal shift is seen as the state becomes suburbanized and

traditional rural power erodes. Business influence is projected to increase, as is concern over resource limitations. Special interest groups likely to gain influence in the next twenty years include educators, retirees and the aged, small businessmen, and consumerists. Fundamentalist religions and unions are generally forecast to lose influence over the remainder of the century.

Public Interest In Politics. A majority of respondents foresee that a larger proportion of the public will become involved in campaigning and lobbying due to the increasing prominence of single issue groups and availability of the electronic media. Voting rates are projected to increase with public educational level and voter age. Significantly, several respondents note that persuading excellent candidates to run for elected office is becoming increasingly troublesome for two reasons: (1) Time demands and pressure on officials has escalated; (2) The area's high geographic mobility shuffles promising candidates, especially business people, out of the community after a few years' residence.

Religion

Changing Emphases. Respondents tend to feel that the "me-ism" of the 60's and 70's and interest in evangelical/charismatic churches have peaked, and the next twenty years will see some retrenchment and reorganization in organized religion. There will be greater emphasis on the search for "traditional" spiritual guidance and on the affiliative needs of the congregation. Respondents are split on the future of para-church organizations, with a majority of respondents predicting decline in that quarter and greater emphasis on small groups within congregations, which will change membership and thrust in response to parishioners' needs. Emphasis on educational activities and community programs

geared to parishioners' needs is expected to increase. This community emphasis will be manifested in church-sponsored social action as religious organizations try to accommodate spiritual and communal needs. The impact of religious organizations is projected to grow in the area of social welfare and assistance as government reduces services. Respondents also project growing influence on politics, though political influence will be indirect rather than the result of lobby pressure. A majority of respondents projects static or declining impact as regards crime, birth control, and ethics.

Religious Work. All respondents agree that ministers will not be required to be licensed counselors in the year 2000, though there may be legislative attempts in that direction and religious training will place increasing emphasis on pastoral counseling. Other skill areas required by ministers will include practical business skills and holistic health. A majority of respondents project increase in the prevalence of paid employees, especially in the areas of religious education, clerical and accounting work, and ministry specialists who will focus on certain age groups or need areas.

Future Issues. The most commonly mentioned environmental pressure which will affect churches in the next twenty years is the church-state issue, especially proper taxation policies and governmental policy towards religious schools professing discriminatory beliefs. Other pressures cited include ecumenical initiatives, needs of the elderly and of singles, community housing needs, a consumer-oriented view of religion, and world problems.

Retail and Service

General Outlook. The eleven respondents in the retail and service sector foresee general growth throughout the remainder of the century in employment,

number of firms, and business spending in every business sector but agriculture. The future problem area mentioned most often for retail and service businesses is cost control, followed by shortages of trained people, keeping up with technological advances, and government regulations. Labor-management relations are expected to improve as union and worker participation in management increases, paralleling a projection made by area manufacturers. The major issues affecting the relationship between business and government are projected to be regulation, taxation policies, and attitude towards land use and business growth.

Emerging Business Practices. Respondents split on the likelihood that big chains would greatly reduce the chances of small local entrepreneurs. Some respondents feel that high interest rates, start-up costs, and the problems of financing seasonal sales fluctuations will squeeze out small local entrepreneurs; in contrast, others note that entrepreneurship has always flowered in the face of such problems and micro-computerization and modern telecommunications (such as cable television) will enable local business people to exploit localized specialty markets. Bankers project radical changes in their industry in the next twenty years as full service retail outlets are replaced by myriads of automated tellers, innovative financial instruments become legalized, and banks are allowed to cross state lines, favoring mergers, economies of scale, and centralization of decision making. In real estate, the next twenty years will see a move towards the national full-service realtor, offering financing and insurance as well as sales service. While retailers agree that more shopping will be done by telecommunications, they project that a trend towards more personalized service will advance simultaneously. Consumers will increasingly rely on telecommunications to purchase "sterile" commodities, such as small appliances, but they will demand more sophisticated personal service concerning

personal commodities such as clothing, luxury items, and high technology entertainment centers. These opposing trends will cause reduction in unspecialized sales jobs, while at the same time demand for more professionalized sales people in personal commodity sector will increase.

Social

The Family. Several respondents project that the next twenty years will feature renewed interest in the traditional family unit and an increase in multi-generational family living. Reasons cited for these trends include increasing interest in enduring relationships and financial pressures. Simultaneously, several respondents expect more popular acceptance of such nontraditional living arrangements as unrelated families living together, single-parent families, and households shared by unmarried elderly people. Most respondents foresee a trend away from detached homes, and towards high-density living in townhouses or apartments. These high-density developments may be organized around special communal interests, such as retirement communities, but developments not specifically organized in that way may feature more mixture of residents by age, sex, and race.

Mobility. Considerable disagreement characterizes projections concerning social mobility in the next twenty years. Some respondents foresee decreased mobility due to limited economic opportunities, saturation of the white collar job market, and the emergence of a more stratified society due to conservative court decisions concerning social justice issues and an educational philosophy which neglects middle achievers. These respondents suggest that the upper and lower classes will become redefined and the middle class will be thinned out. Others take the opposite view of future mobility, arguing that an historical

trend in that direction is established and that acceptance of social mobility exists as a state of mind with people having more confidence and determination in their ability to improve their lots.

Nature of the Community. There is little consensus concerning the likely character of the TJPD by the year 2000. Some respondents forecast a merging of rural and urban interests, particularly in terms of public service delivery due to economic factors, while others see no change or increasing separation of interests between urban and rural segments. Most respondents project that discrimination will become a less timely issue by the year 2000, citing historical trends, though they note that economics and conservatism could have a negative impact. Age discrimination may become a more important issue as retirement communities grow in the area and as the population ages. Educational discrimination is mentioned as a possible future problem as good jobs will require increasingly sophisticated educational preparation while the cost of that preparation will rise sharply.

Work Environment

Work Week. Respondents disagree on the probability of the four day work week and 35 hour week becoming common by the year 2000. Those representing education, medicine, law, and retail and services tend to feel such innovations are likely while manufacturers take the opposing viewpoint, citing the need to keep costly machinery in full use. Several respondents project more sabbaticals, especially to allow retraining of employees. A plant manager predicts that personnel loaning or trading will become more common in the next twenty years.

Career Changes and Retirement. Opposing forces militate for and against career mobility in the next twenty years. Some respondents note that higher educational levels and technological advances will tend to enhance career

mobility, but others expect it to decline due to increasing desire for job security and better employee preparation prior to entering a chosen career field. Nearly all respondents agree that retirement age will go up due to financial concerns, problems with social security, and legislation. A large majority of respondents foresee that firms will put increased emphasis on retirement counseling and retraining employees for post-retirement activities.

Racial and Sexual Equality. Nearly all respondents project that the proportion of blacks in supervisory positions will increase in the next twenty years. Most also foresee a high likelihood that sex-typed jobs will virtually disappear, but there is less agreement on whether females will achieve parity with males as regards supervisory positions. Respondents agree that the gap between unemployment rates of black and white adults will narrow, but there is no consensus on foreseeable trends in the respective male and female unemployment rates since there is uncertainty as to how many females will be seeking employment.

Other Trends. There is a lack of consensus on exact educational levels likely to be required of workers in the year 2000, which is understandable in light of the diverse job types of interest to this group of respondents. The only clear consensus is that all jobs will not require licensing or certification. There is, however, some feeling that specialized training will become a more important responsibility of public educators and that formal on-the-job training will simultaneously become more universal. Worker priorities are projected to shift away from salary and length of work week and towards job security, quality of work environment, and fringe and retirement benefits. Manufacturers generally foresee no trend towards job sharing in the next

twenty years, but respondents in the fields of education, law, and medicine forecast an increase in the prevalence of that practice. A majority of respondents in all fields project an increase in part-time workers.

THE PIEDMONT 2000 FORUM:
EDUCATIONAL ISSUES FOR PVCC

Over 30 of the area leaders interviewed during the Piedmont 2000 project, as well as PVCC administrators and faculty, assembled at Piedmont Virginia Community College on July 19, 1982. Findings of the study were presented following which participants divided into three groups to review those findings (see previous sections) and discuss the implications of this picture of the next twenty years for educators and trainers. Discussions were taped and transcribed. Participants reviewed interview and statistical data (see Appendix A) in the course of considering the dominant educational needs of the TJPD over the next twenty years. They also addressed three specific issues: who should be taught, what should be taught, and who should teach. This section summarizes participant deliberations in these areas as they relate to PVCC.

What Are the Dominant Educational Needs of the Thomas Jefferson Planning District?

Discussants characterized four areas as likely to require increased educational emphasis through the remainder of the century. They are 1) developing appropriate entry level skills for young people and single parents, especially women who are entering an increasingly demanding, competitive job market; 2) retraining workers who are employed in sectors undergoing rapid redefinition due to changes in technology or employer and customer needs; 3) helping people, especially retirees, make productive use of leisure time, and 4) changing basic attitudes towards work and learning so that workers will be more productive and more comfortable with an environment of rapid change. Because of the pervasive

importance given to the first two areas in discussion, they will be reviewed in greater detail below.

Declining demand for unskilled workers is a pervasive theme running through the Piedmont 2000 interviews as well as the forum. A discussant summed up the problem by saying, "There is an increase of youth that are not completing high school and yet the demand for the unskilled is evaporating. The Governor indicates that this process of remedial education be removed from higher education and that those who have not done well in the past are the problems of high schools, not higher education. Now we find ourselves adults, unskilled, without a high school diploma; the school has failed, the college has failed, the community has a problem." Educators pointed out that students are staying in school longer due to lack of alternatives, and that educational programs leading to desirable, skilled employment are becoming increasingly difficult and lengthy. If the nature of available jobs is indeed changing so that they can only be done by people with advanced skills, a critical question arises. One discussant puts it this way: "Do we assume all students are capable of (acquiring) the skills that are needed in this kind of technical world? That is the real terror. I don't think we can assume all of them will fit into this world." The inherent demands of the future job marketplace may be such that a substantial percentage of citizens become unemployable, including many who are presently working at relatively unskilled jobs.

One response to the dilemma of, in one discussant's words, "facing the fact that we cannot bring all our workers to a skilled level" is to purposely create a "residual pool of work for the unskilled." Another response is to critically consider the training demands placed on prospective workers. In response to an anecdote concerning the difficulty one community college

student had passing required courses in a technical degree program, a discussant said, "A question we could ask is whether Algebra II and Math 161 were really necessary in order to certify competence in that job area. I think we have to be very careful about what kind of standards we do establish for entry into the job world."

Discussants suggested that, as the nature of work changes, society's concept of work may also have to change. Work may come to be regarded as a scarce resource to be systematically allocated, a privilege for the few, or a governmental responsibility.

Who Should Be Taught?

Nationally and locally there is an emerging trend for those students who are academically deficient or of lower socio-economic status to forego advanced training while the training programs which lead to desirable skilled employment are filled by students who are already highly employable because of proven academic ability. During interviews respondents referred to the possibility that "educational discrimination" will be a significant problem taking on great significance in the next twenty years. Discussants called this a conflict between "haves" who are capable academically, financially secure, and education-oriented, and "have-nots" who lack these characteristics.

Administrators at PVCC noted that three percent of their students have graduate degrees and ten percent have baccalaureate degrees. One PVCC administrator said, "Over fifty percent of our students in respiratory therapy already have their bachelor's degrees. Whose seat are they taking in that classroom?" When attractive training programs such as nursing, data processing, and electronics have more applicants than student slots, it is difficult to deny

entrance to the more aggressive, capable students. In addition, the less well-qualified "have-nots" may be unable to undertake long training programs because of financial considerations. One participant observed, "An unskilled worker who is out of a job cannot afford to come here and learn a trade, but the person who comes from a fairly wealthy background can come in now and take his fourth degree." This problem is particularly onerous in an atmosphere of rapidly rising tuition at public colleges. A further problem is that unskilled workers who are presently employed in jobs that are in jeopardy are not likely to expend the time and money, and to risk failure, to prepare for other future employment.

Some discussants believed that private industry would have to take the lead if "have-nots" are to be trained for skilled occupations by encouraging unskilled employees with financial incentives and tuition support, on-the-job training programs, and paid educational leaves. Educators may respond by intensifying efforts to offer job upgrade programs at convenient times and places and by emphasizing competence-building for "have-nots" in primary and secondary school. Most discussants felt that society had to attack attitudes towards learning by "educating people to be educated." Governmental policies are critical as regards educational grant and loan support as well as direct support of public institutions. One discussant suggested that welfare-like payments to support the families of unskilled workers undergoing retraining would be a fruitful educational policy despite its present political unacceptability.

What Should Be Taught?

In a time of rapid change, the issue of what should be taught acquires

special significance. One discussant summarizes the problem this way: "It used to be that education prepared people for adult life. How do you prepare them for something that doesn't exist yet? The world that the children are going to live in tomorrow isn't here yet. You teach them for today's society and already the knowledge is obsolete." Workers need specialized skills, but educational institutions have great difficulty stocking up-to-date machinery. One discussant compared specialized training to "shooting at a moving target." A frequently mentioned solution was for educational institutions to emphasize basics while leaving narrow, specialized training to private employers. The issue then becomes, what are the basics between now and the year 2000? Computer literacy may join traditional subjects as a basic course; but discussants suggested that motivation to succeed and an attitude welcoming lifelong learning are equally basic in a rapidly changing society. One discussant suggested that graduation requirements may include such skills as "motivation, work ethics, the notion of showing up on time. Businessmen tell us our students have no idea of business productivity and profit. They don't understand America's free enterprise system, and don't appreciate it. They take it for granted. These are fairly basic issues of the curriculum if we are serious."

Changing lifestyles may favor new emphases in curriculum also. Single parent households, usually headed by a woman, are becoming increasingly common while alimony awards are falling. The result is, in the words of one discussant, that "...the woman is going to bear the brunt of the whole change in this concept of the single parent. The woman has got to become more self-reliant, more independent." Unaccustomed roles may favor continuing education. Increased leisure time and early retirements will favor recreational courses, but an unresolved issue is the extent of society's willingness to devote financial

support to this kind of education. Human needs and wants change rapidly, but the role of educational institutions in affecting "non-traditional" needs and wants has not been clearly defined. Recently, for example, the State Council on Higher Education has taken the stand that public support would only be given for courses that are part of degree programs; yet there will likely be great demand in the future for courses that are not part of degree programs.

Who Should Teach?

Prior sections have delineated a wide array of educational tasks over the next twenty years: train for skilled occupations; teach attitudes towards work, learning, and change; teach ne[illegible]djustment and recreational skills. And yet, as one discussant said, "The demands put on public school teachers are astronomical." Discussants questioned the responsibility and ability of schools to be all things to all people. If the community college concentrates on high technology training, little is done for the "have-nots" of society. If emphasis is put instead on remediating educational deficiencies, the responsibility for skill training falls on employers or shifts to private specialized schools which could cater to an educational elite. Discussants suggested that despite currently dropping public support for advanced education, it is a community responsibility that can't ultimately be avoided. Education will become a more multi-faceted enterprise. One discussant suggested educators must "build a structure to keep in touch with what employers need and people want so that the biggest change in the institution would be in its responsiveness, in its ability to read and respond to its environment. The answer might be in that structure, those interactions, the linkages..." Linkages with

business should expand. Discussants also suggest that the community's human resources have scarcely been tapped, especially retirees, who have made substantial contributions as lecturers or tutors in public schools.

CONCLUSIONS

In this concluding section, the Piedmont 2000 Committee summarizes some major findings which seem to have implications for educators. The "range of the possible" summarizes the predominant projections relevant to each area along with alternative views, where such views appeared in the course of the study. Finally, the committee suggests some implications for educators in the next 18 years.

Computers, Communications, and Advanced Mechanization Technology

Range of the Possible: New applications of advanced technology are likely to have increasing impact on a variety of sectors as computer software improves and managers seek ways to improve productivity and services. Automated equipment will reduce the need for unskilled workers in banking and manufacturing while telecommunication shopping will account for an increasing proportion of retail sales. Technological impact on health care is likely to be profound as computer-assisted diagnosis and home health condition monitoring and home health care grow in prevalence. Jobs in health care, office work, and other sectors will be restructured: retraining of employees and unemployed adults will grow substantially as people try to upgrade skills. New tiers of technological and systems specialists will develop in most fields.

Implications:

- Short-term needs will include helping people cope with "computer-phobia" and developing computer literacy for educators.
- Multidisciplinary programs will be needed with microcomputer operation/ systems analysis as the core and application training in diverse fields: Cooperation between practitioners and employers and computer instructional personnel will be essential to tailor courses to the specific requirements of diverse community settings.
- The emphasis of computer curricula is likely to shift over the 18 year period away from programming per se to software application and systems analysis.

Single Parent Families, Pluralistic Living Arrangements

Range of the possible: The same underlying pressures may result in varied social arrangements. Those pressures are economic distress and the desire for meaning and stability in a rapidly changing world. While the predominant projection will be the continuation of the traditional family, these pressures will favor the creation of multiple group living arrangements in which related and unrelated people gather for economic and social support. Continued increase in divorce rates will occur as poeple become unwilling to tolerate unsatisfying relationships when socially acceptable alternatives exist. Alternatively, however, financial and social pressure and renewed interest in traditional religion could favor increased determination to keep traditional families together.

Implications:

- Schools and colleges must go beyond the presentation of academic material to structure the curriculum in part around social roles students will eventually expect to fill: worker, spouse, parent. Knowing oneself is likely to be a critical skill for living in a time of rapid change.
- Family and personal counseling services are likely to be increasingly needed as alternatives expand and families try to deal with social stress.
- Legal complexities will grow: who is a dependent, who is responsible for children, financial obligations, legal obligations. This may create a demand for consumer education and retraining of human service employees.

Political Climate and Growth in the Planning District

Range of the Possible: Political conservatism will characterize the planning district and Virginia. Factors influencing this conservatism will include an increasingly suburban population which historically has adhered to conservative political views; concern over maintaining the unique cultural identity of the area; concern over natural resource conservation, particularly water; and a public spending agenda favoring renewal and expansion of broadly based public services (e.g., schools, highways) as opposed to income redistribution and expansion of services to specific groups. An alternative scenario, a liberal shift, could be caused by reaction to the perceived excesses of the political right and the rising to power of the "liberal" '60's generation. Public debate will continue over the desirable limits of allowable business expansions and over the responsibility of various political jurisdictions to encourage and support expansion.

Implications:

- The most important factor governing the rate of growth will be the degree to which the major political subdivisions, Chamber of Commerce, Greater Charlottesville Area Development Corporation, and area planners agree and act on a commonly held strategy to attract new business and industry into the planning district while providing for natural resource management and development of the infrastructure.
- There is a need to teach more about the unique cultural identity of the area as well as the social, natural, and economic resources so the implications

of policy decision will be more fully understood. Public information as well as classroom teaching are parts of this need.

- There is a need to encourage a political climate in Virginia supportive of activities that serve the long-term good, such as education, and resource conservation and development. As educational control becomes more centralized and budgeting shortfalls continue, educators may seek to take a more active role in local and state politics.

Shifts in Locus of Control

Range of the possible: Federal functions will increasingly be delegated to states and localities. Local control over primary and secondary education, however, will migrate to the state level. The private sector will be under increasing pressure to discharge social welfare functions such as education, health, and unemployment relief. These projections are very vulnerable to changes in philosophy on the part of elected officials.

Implications:

- The community college will need to articulate the importance of all aspects of its comprehensive mission or it will lose those parts of the mission that are unpopular with those in power at any particular time.
- There is a need to improve training for social service and to expand it to volunteer groups such as retired citizens and to non-traditional settings such as industry.

Changes in Functional Arrangements in Private Enterprise

Range of the Possible: Retail and service businesses will expand to offer a wide variety of services which have previously been provided by separate firms and professionals. Size of viable firms will grow as smaller firms in such areas as real estate, finance, sales, legal services, and medicine are absorbed. Opportunities for new small businesses will decrease. Retail firms will grow in size and complexity, but decrease in number. More sales are accomplished from the home via telecommunications. Alternatively, public demands for personalized service and strong entrepreneurial motivation may favor continued strength of small firms offering specialized service.

Implications:

- More training will be needed in such areas as the marketing and operational implications of alternative distribution methods.
- More training will be needed for managing combined personal and business services that have traditionally been independent, such as real estate, insurance, and financial advising. Service workers will be called upon to understand basic principles of various jobs which have traditionally been considered separate and to be able to bring those newly integrated fields together when serving consumers.
- More and better training will be needed in small business management and in entrepreneurship, especially in the areas of finance and marketing as well as

general management. The ability to adapt to change will be a necessary characteristic for working in private enterprise. Training will be needed for development of the ability to work in changing organizational and functional arrangements.

Importance of Leisure

Range of the Possible: The importance of leisure activities will grow with prosperity, declining time spent on work, growth in the retired population, and successful marketing by the developing leisure industry. Travel and tourism are likely to increase. There will be an increase in professional recreation workers, and leisure activities will become more complex and better integrated into an individual's life style. Alternatively, economic hardship and insecurity about the future may cause renewed interest in profit-making part-time activities.

Implications:

- If educators are to take an active part in training people to make constructive use of leisure time, governing bodies must be made to see that as a viable educational mission deserving public subsidy.
- A need is developing for training of recreational leaders in leisure-oriented businesses, public agencies, residential communities, and, possibly, in industry.

Social Stratification and Educational Discrimination

Range of the Possible: Discrepancy between societal "haves" and "have nots" may increase as job mobility and geographical mobility decline due to older, more stable population, fewer available attractive jobs, reduced federal emphasis on income redistribution, declining emphasis in higher education on encouraging under-prepared students, and increased out-of-pocket cost of advanced training. Economic revival resulting from control of federal deficits and inflation and increased productivity and advent of social problem-oriented administrations in the late 80's could be ameliorating influences. Still, student competition for attractive training programs which are expensive and exclude marginal students is likely to persist.

Implications:

- Budgetary pressures will force education to come to grips with the problem, "Who is to receive developmental/remedial education, at what level, and for how long?"
- The relationship between education and employment will continue to be controversial. Among the issues are attitudes toward classical education, training for jobs, the functions of industry and education, and so forth.
- Educators must expect to be held accountable to students and others by showing the relevance of curriculum to job performance.
- Educators must develop better ways to train people currently classified as "untrainable". Interest in early intervention is likely to grow, including

physical and mental exams from birth and provision of cognitive training at an early age, particularly for "high risk" infants. These efforts will create financial pressure on governmental bodies and may encounter resistance from groups resenting further intrusion of government into family life. Educational attempts to adapt learning programs to the needs and abilities of the individual may be resisted by prospective clients, who are anxious to obtain immediately marketable skills.

- Employers need to cooperate with educators in encouraging further training of presently employed workers whose jobs are in long-term jeopardy.

Aging of Society

Range of the Possible: The proportion of the population in the middle-aged (40-64) bracket will go up dramatically. This is likely to cause reduced population mobility and increased worker productivity, and it will favor the continuation of a conservative political philosophy favoring "quality of life" issues. This demographic trend augurs well for the economy. However, advancement opportunities will be limited and at the same time employers will face shortages of promotable entry level employees. Modest increases in numbers of school-aged children and retirement-aged people will begin, taking up any increases in public revenues caused by an expanding tax base. Alternatively, as the '60's generation comes to power and local tax revenues increase, renewed interest in liberal causes may grow, particularly the diversion of public and private resources into retirement funds and public facilities for the aged.

Implications:

- There will be an increasing need for education for aging and training for retirement, including such areas as financial management, recreation, health and legal problems, and part-time home businesses. Public financial support of this kind of training will be needed, but may be increasingly controversial as the elderly are perceived by some groups to be competing with youth for jobs and with other societal sectors for public funds.

- Training in the special legal and medical problems of the elderly will be needed for service professionals in a variety of occupations.
- New occupations in the health, legal, social service, and recreation areas are likely to emerge, and education to address those occupations will be needed.

The Changing Nature of Work

Range of the Possible: Demand for unskilled workers will continue to shrink as technology is adapted to routine work and makes skilled workers more productive. At the same time, the jobs that are available will require increasingly advanced knowledge and skills. Society may be rapidly approaching the point at which a significant proportion of the population cannot be made employable, and the basic concept of work may begin to undergo change. Consideration of how work is distributed and to whom may become a matter of public policy. Workers will be in demand who are comfortable with a changing technological environment but who also have a working knowledge of human relations and business concepts. As employed workers become more skilled, professionalization of various jobs is likely to grow. Professionalization, high skill levels, and increase in service sector jobs may bring about public requirements for licensing and certification. An alternate possibility is that unskilled employment opportunities will persist, possibly as a result of conscious policy by government or business, or because automation will continue to open up new jobs in the service sector.

Implications:

- Educators will need to be among the resources engaged in an education program to explain to the population why the economy does not provide jobs for everyone and yet is at the desired level of productivity.
- Public requirements for licensing and certification will directly affect curriculum. Educators can and should take a leadership role in defining such new curricula.

External Influences on Education

Range of the Possible: In an atmosphere of rapid change from outside schools and increasingly complex job requirements, educators will find curriculum under greater scrutiny by non-educational specialists and businessmen. Schools will be pulled in seemingly contradicting directions. They will be required to allow young people to develop increasingly specialized skills while still providing for broad understanding and remedial training. Post-secondary institutions which attempt to discharge all these roles may find it increasingly hard to compete with specialized "high tech" institutions which siphon off the more capable students with the ability to pay. Retraining of adults, both for employment and for leisure, will be the fastest growing educational function.

Implications:

- Educators will have to find ways to fulfill the short-term employment training needs of local business while still accomplishing their broad-based missions. Maintaining traditional "liberal educational" requirements will make it harder to compete with specialized training schools for students, though the need for persons who are well-versed in basic skills will be apparent also.
- The respective financial obligations of business, educational institutions, and the student will need to be cooperatively developed, especially in the instance of very specialized, expensive training.
- Business is likely to require educators to find new ways to certify competence rather than simply completion of a course of study. Educators

should explore new credentialing strategies that recognize on-the-job training and experiential learning as well as traditional coursework.

- Educators will expand use of community resources such as equipment, space, and specialists. Existing policies concerning process monitoring and productivity reporting to the state may have to be revised.

The Rapid Expansion of Knowledge

Range of the Possible: As it becomes increasingly difficult for people to master expanding bodies of knowledge, formal education will emphasize techniques for acquiring and managing knowledge rather than the acquisition of knowledge itself. Training for information handling professions and computer literacy will become important parts of schooling. Many sectors of society will become increasingly concerned with people's attitudes as well as skills, and will look for employees who are willing to retrain and are comfortable with changing roles and organizational structures.

Implications:

- The community, especially the business sector, will put renewed pressure on educators to inculcate attitudes stressing social responsibility and the work ethic.
- Educators must strive to integrate specialized training programs with teaching how to learn: reading, computer literacy, and communication.
- Instruction concerning how to do valid and reliable research will be needed.
- Change itself may become an increasingly viable part of the curriculum. Educators should help students to regard change as an opportunity rather than a threat.
- Educators will be pressured to help students develop a motivating concept of their options in building life roles and to inculcate social values about such things as ecology, social responsibility, and population control. Yet students and the general public may rebel against education not directly connected with job skills.

APPENDICES

Appendix A: Demographic and Economic Profile of the Thomas Jefferson Planning District*

Table 1

TOTAL EMPLOYMENT BY INDUSTRY, 1973-1978
THOMAS JEFFERSON PLANNING DISTRICT

INDUSTRY	YEAR					
	1973	1974	1975	1976	1977	1978
Manfacturing	10,335	10,210	9,416	9,516	9,593	10,111
Non durable	4,750	4,629	4,396	4,293	4,245	4,126
Durable	5,585	5,581	5,020	5,223	5,348	5,769
Federal Government	2,058	1,974	1,992	1,923	1,928	1,906
Civilian	1,315	1,284	1,321	1,241	1,257	1,251
Military	743	690	671	682	671	655
Mining	60	0	0	0	65	65
Farm (including proprietors)	4,132	4,143	3,870	4,139	3,588	3,641
Ag. Serv, Forestry, Fishing and Other	80	16	18	0	160	289
Construction	5,327	4,664	4,010	5,524	5,573	4,729
Transportation and Public Utilities	1,735	1,990	1,763	1,988	2,450	2,125
Wholesale Trade	980	1,017	1,312	1,319	1,409	1,553
Retail Trade	6,233	6,433	6,447	7,124	7,704	8,306
Finance, Insurance and real estate	2,438	2,257	2,152	2,252	2,202	2,450
Services	7,968	8,430	8,372	8,417	8,597	9,163
State and Local Gov't.	11,118	12,135	12,698	13,124	13,385	13,875
Non-Farm Proprietors	3,009	3,170	3,234	3,305	3,485	3,673
**Total Employment	56,941	57,588	56,747	60,005	61,221	63,251

Source: Economic Trends in Substate Regions of Virginia, 1973-1978
J. L. Knapp, Tayloe-Murphy Institute, 1981.

*Unless otherwise cited, data in this appendix are taken from Economic Trends in Substate Regions of Virginia, 1973-1978 by John L. Knapp, which is available from the Tayloe Murphy Institute.

**Details do not add to totals since some sub-industry totals are understated because data were suppressed to avoid disclosure.

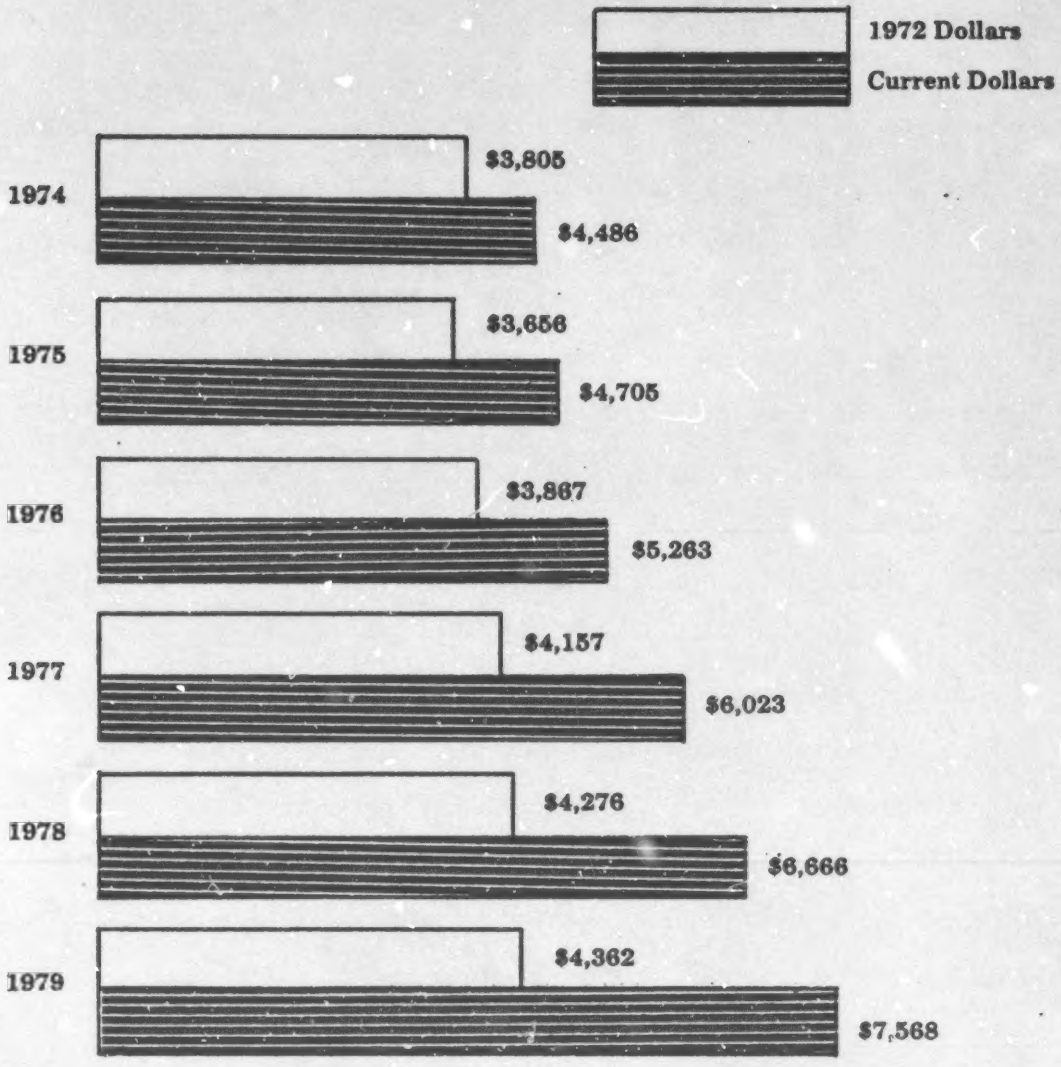
Economic Profile

Table 1 shows total employment by industry from 1973-1978 in the Thomas Jefferson Planning District. Overall employment increased at an annual rate of 2.2 percent in the period 1973-1978. This rate of increase was partly due to rapid expansion in employment by the University of Virginia, which increased enrollment by 39 percent over the period but has not stabilized. Due to the influence of U.Va., which employs over 9,000 workers, state and local government are the area's biggest employer. Manufacturing is the next largest employer, followed by services, which include substantial employment in the tourist trade and in private health care facilities.

Besides state and local government, the most rapid employment growth sector in the Thomas Jefferson Planning District (TJPD) from 1973 to 1978 was retailing, which increased at an annual rate more than double the national rage. Manufacturing employment showed a slight drop, compared to a slight increase nationally, due primarily to the large decline in a single year, 1975. Service employment grew at an annual rate about half that of the nation. Agricultural employment declined at an annual rate of 2.8 percent, four times the national rate of decline. Piedmont 2000 respondents project increases in the next twenty years in all categories except agriculture (see Manufacturing, Retail and Service).

Table 2 (next page) shows per capita personal income in the TJPD for 1974-1979, both in current dollars and constant (1972) dollars. In constant dollars, personal income grew at an annual rate of about 3.9 percent, slightly more than the state average of 3.7 percent. Per capita personal income in the TJPD has historically been somewhat below the state average, due partly to the large number of unemployed university students who are included in the per capita count. Average earnings per worker were $10,296 in 1978, 87 percent of the state average.

Table 2
Per Capita Personal Income, 1974-1979
Thomas Jefferson Planning District

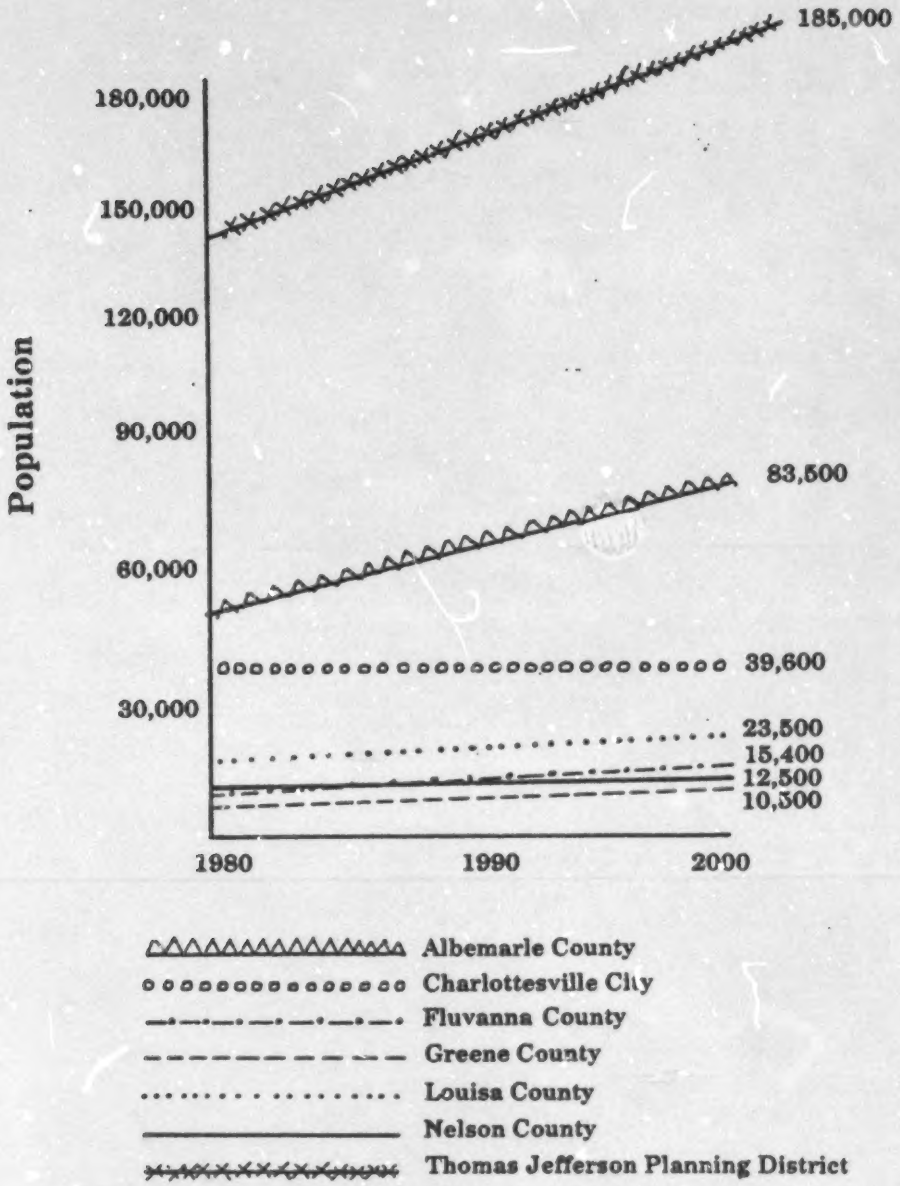


Source: Personal Income Estimates for Virginia Counties and Cities.
J. L. Knapp and D. C. Hodge, Tayloe Murphy Institute, 1980.

Population Profile

Table 3 shows 1980 population figures and growth projections for the counties and city in the TJPD. From 1973 to 1978, population growth was 9.1 percent, slightly higher than statewide growth. Three-fourths of the growth was due to immigration, with a substantial amount of the immigration connected with the one-time enrollment increases at U.Va. For the remainder of the century, population of the TJPD is projected to grow 28.7 percent to 185,000, compared to 23 percent projected growth rate statewide, with much of the growth occurring in Albemarle County. Louisa, Fluvanna, and Greene Counties are also projected to grow substantially while Nelson County and the City of Charlottesville remian stable or experience only modest growth.

Table 3
Population Growth Projections 1980-2000
Thomas Jefferson Planning District

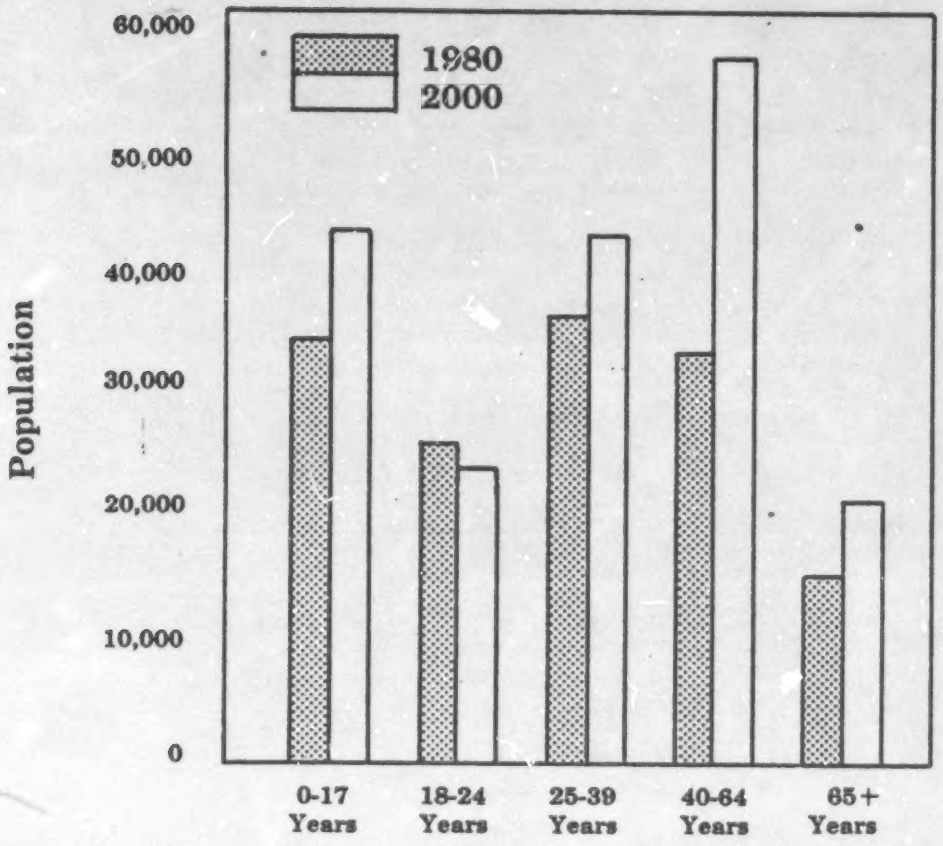


Source: Virginia Department of Planning and Budget 1980 Figures, U.S. Bureau of Census

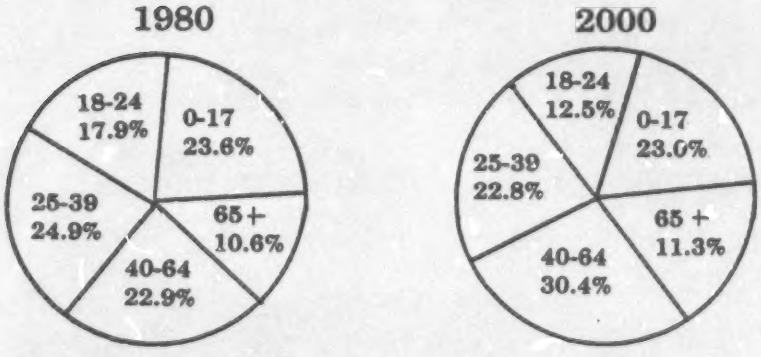
Table 4 shows population growth and makeup by some selected age groups. The most significant growth will occur in the 40-64 age group, which will make up 30.4 percent of the population of the TJPD by the year 2000 versus 22.9 percent in 1980. The 18-24 age group will decline in actual numbers and will comprise 12.5 percent of the population of the TJPD in 2000 compared to 17.9 percent in 1980. Interview respondents project that immigration will continue to be a source of growth, especially among young professionals and retirees.

The three population composition figures at the end of the appendix depict changes in the make-up of the population from 1960-2000. The three figures graphically portray the aging of the post-war "baby boom" generation from youth to the middle years.

Table 4
Population Growth By Age Group: 1980-2000 and Age Distribution

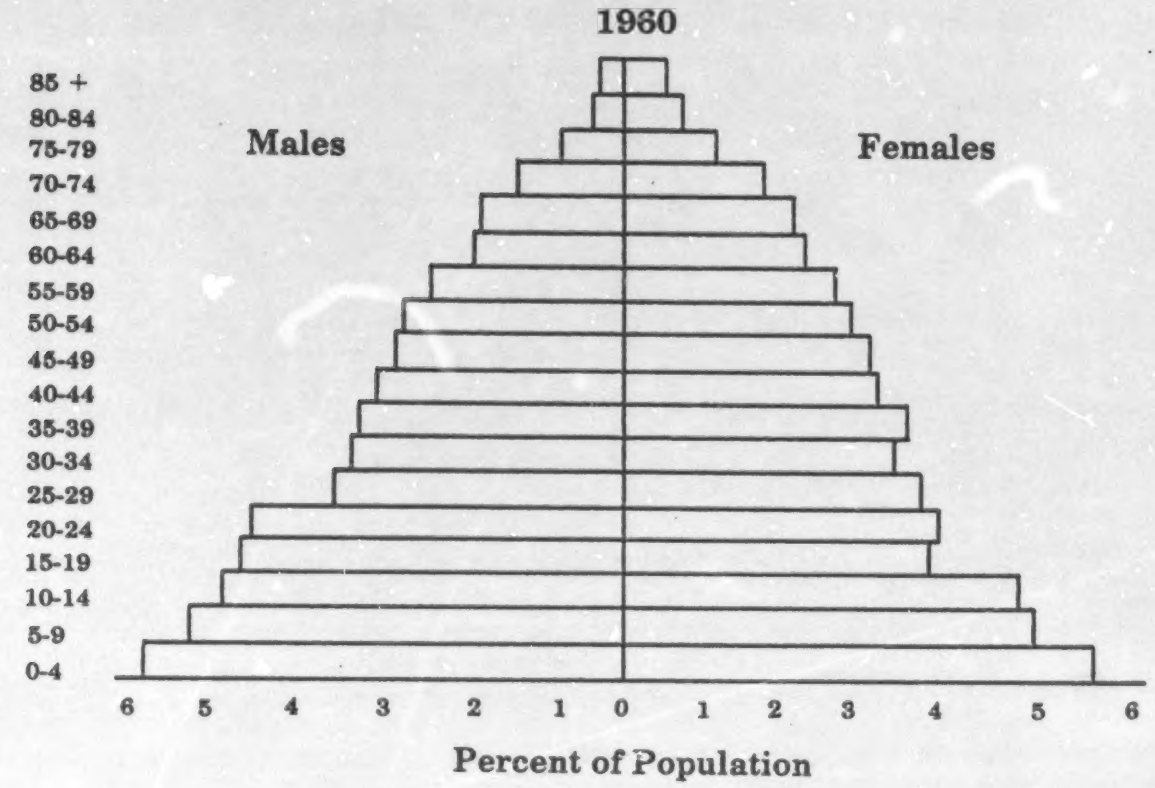


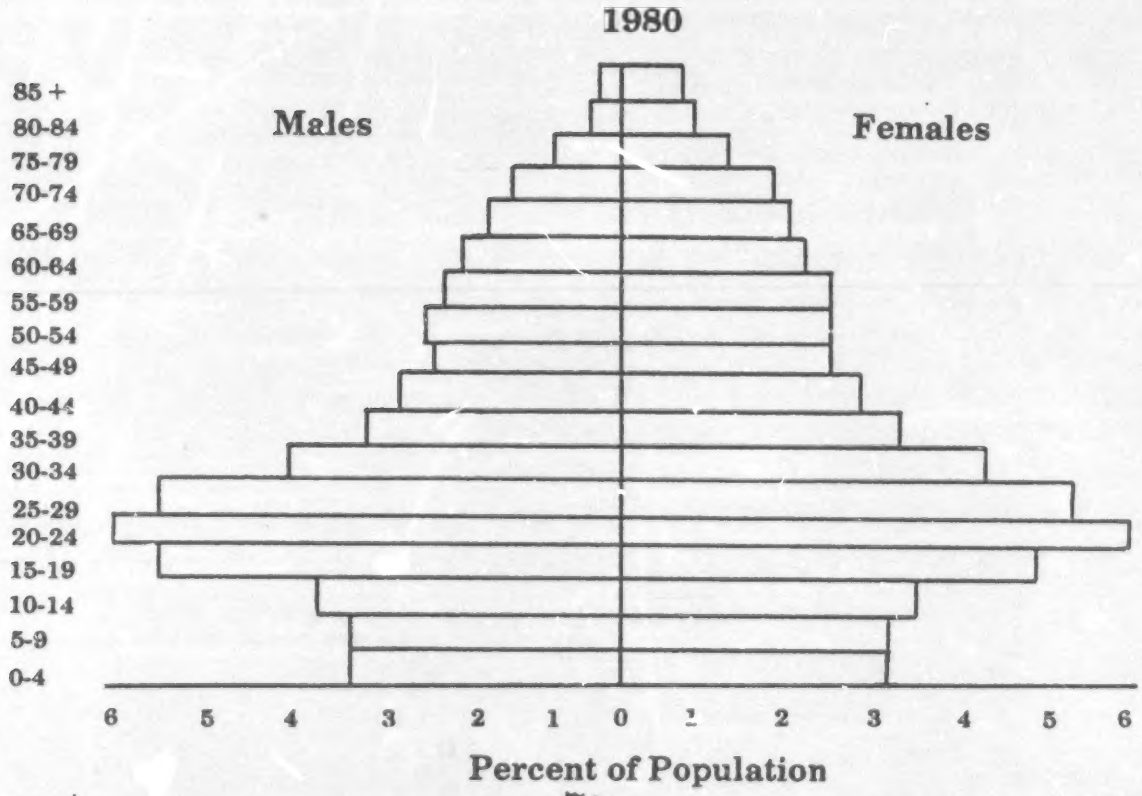
Age Distribution

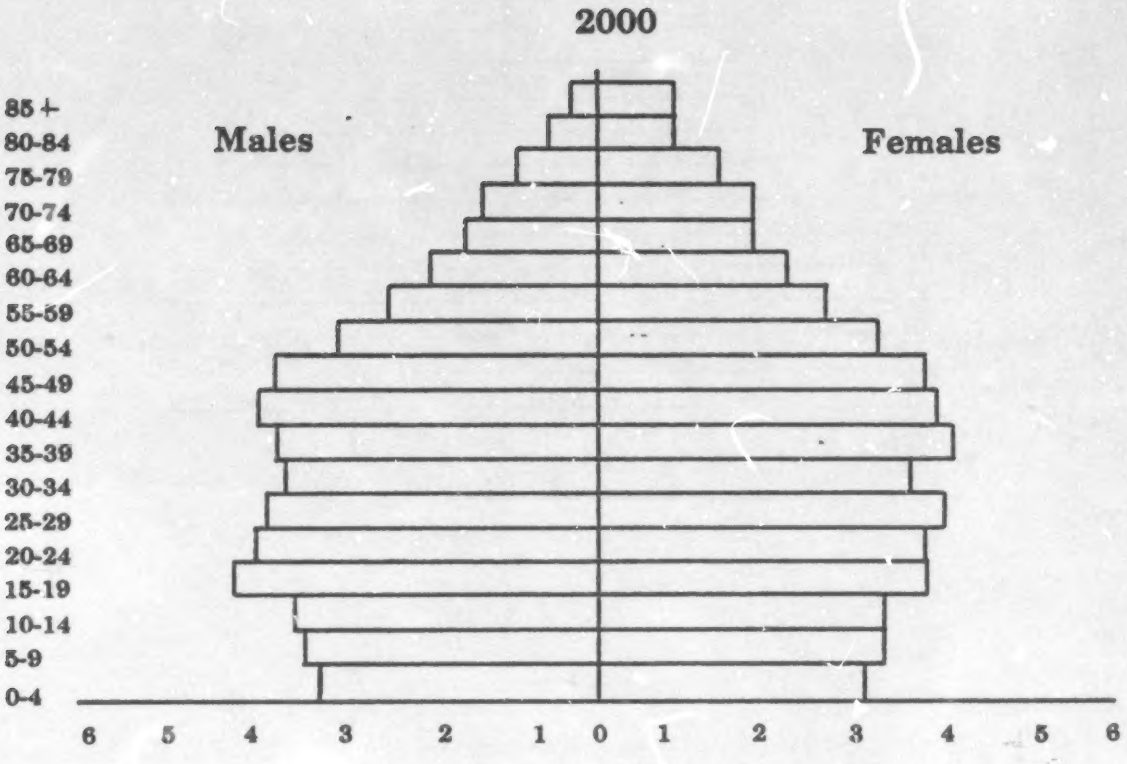


Source: Virginia Department of Planning and Budget

Population Composition Figures
Thomas Jefferson Planning District: 1960-2000







Sources: Virginia Division of Planning and Budget, 1980 & 2000 figures U.S. Bureau of Census, 1930 figures

Appendix B: Community Participants

Thomas E. Albro, City Council
Rabbi Dan Alexander, B'Nai Brith Hillel Foundation
Dinah Ansley, Hospice of the Piedmont
John Baldino, VEA UNISERV
The Reverend Arie Bestebreurtje (deceased), former minister, First Presbyterian Church
Patrick Bird, University of Virginia
Drewary Brown, Multi-Purpose Service Center
Jerry Brown, Chamber of Commerce
Lawrence Brunton, former Mayor, City of Charlottesville
Frank Buck, Mayor of Charlottesville
Joseph Cain, ACME Visible
Eugene Carpenter, Martha Jefferson Hospital
Grace Carpenter, Chamber of Commerce
Carlo Colombini, Viticulturist
Kenneth Comer, Greene County Schools
Henry Conner, Nelson County Schools
Hovey Dabney, National Bank & Trust Company
Opal David, former member, Albemarle County Board of Supervisors
Roger Davis, Hasbrouck & Graham, Realtors
Guido DiGregorio, General Electric
Lindsey Dorrier, Commonwealth Attorney
Bruce Doyle, General Electric
William Drewer, Crouse-Hinds Company
Peter Easter, Virginia Association of Broadcasters
The Reverend Cowen Ellis, First Baptist Church
Munir Eways, Salem M. Eways, Inc.
Rabbi Sheldon Ezring, Temple Beth Israel
William Fishback, University of Virginia
Gerald Fisher, Albemarle County Board of Supervisors
Alton Garrett, United Virginia Bank
George Gilliam, Attorney
Frederick Gignoux, Viticulturist
Arthur Greene, University of Virginia
Miriam Greene, Towers Nursing Home
Carlos Gutierrez, Albemarle County Schools
Bernard Haggerty, Virginia National Bank
Wayne Harbaugh, Thomas Jefferson Planning District
John Harlan, University of Virginia Hospital
Dr. Robert Hodge, Primary Care Center, University of Virginia Hospital
Lester Hoel, University of Virginia
A. E. Dick Howard, University of Virginia
Dr. Robert Jennings, Albemarle County Medical Society
Warren Judge, Sperry Marine Systems
Mercer Kay, Buckingham County Schools
J. A. Kessler, R. E. Lee and Sons, Inc.
H. Lane Kneedler, University of Virginia
James Landreth, Uniroyal
Gerald Lavelle, Badger-Powhatan Company

William Leggett, Leggett Co., Inc.
Mrs. F. R. Lentzsch, Manpower, Inc.
M. J. Ludgate, WCHV/WWWV
Alicia Lugo, Charlottesville School Board
Robert Mattauch, University of Virginia
Thomas McLernon, Charlottesville Schools
Dale Metcalf, University of Virginia
Leigh Middleditch, McGuire, Woods, and Battle
James Murray, former member, House of Delegates
Marion Nolan, Charlottesville-Albemarle Foundation for the Encouragement of the Arts
C. B. Nolen, Fluvanna County Schools
Nancy O'Brien, former Mayor, City of Charlottesville
James Ortega, University of Virginia
Thomas Oster, Intervarsity Christian Fellowship
George Palmer, Piedmont Tractor Co.
David Parrish, Michie Company Law Publishers
Lewis Payne, Wintergreen
John Pezzoli, Region X
John Royer, Royer & McGavock
The Reverend Joseph Ryan, Trinity Presbyterian Church
Frederick Scott, Bundoran Farm
Shelah Scott, Charlottesville-Albemarle Foundation for the Encouragement of the Arts
The Reverend William Smith, Westminster Presbyterian Church
The Reverend Frank Sweetser, Thomas Jefferson Memorial Unitarian Church
Larry Tate, Stromberg-Carlson
Charles Tewksbury, Institute of Textile Technology
John Todd, Frank Ix and Sons
Daniel Van Clief, Nydrie Farm
Michiel van der Sommen, McGuffey Art Center
George Vaughan, Piedmont Virginia Community College
Curtis Wayland, Del Monte
Dr. Ruth Weeks, Psychiatrist
Susan White, Attorney
Paul Wood, Hill & Wood Funeral Home
Donald Zimmerman, State Farm Insurance

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